

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A method for ~~a recovery of~~ recovering zinc from a zinc calcine and zinc sulphide concentrate in connection with an electrolytic precipitation of zinc, whereby a zinc sulphate solution obtained from ~~[[the]]~~ a first leaching stage is directed via solution purification to zinc electrolysis and ~~[[the]]~~ iron contained in ~~[[the]]~~ raw materials is precipitated as jarosite, ~~characterised in that~~ wherein the leaching of zinc calcine and zinc sulphide concentrate is performed in three stages in atmospheric conditions and at a temperature between 80 °C and the boiling point of the solution, whereby ~~[[the]]~~ solids and solution move countercurrently in relation to each other and ~~[[the]]~~ acid content of the leaching stages rises in the direction of the flow of the solids, wherein the concentrate leaching and iron precipitation take place in the second stage.

2. (Currently Amended) ~~[[A]]~~ The method according to claim 1, ~~characterised in that~~ wherein the zinc calcine is fed to the first leaching stage, neutral leaching, where leaching is carried out in a pH range between 2 – 5.

3. (Currently Amended) ~~[[A]]~~ The method according to claim 1 ~~or 2,~~ ~~characterised in that~~ wherein the zinc concentrate and the solids of the neutral leaching stage are fed to the second leaching stage and the acid content is kept in the region of 2 - 20 g/l H₂SO₄.

4. (Currently Amended) ~~[[A]]~~ The method according to claim 3, ~~characterised in that~~ wherein the acid content in the second leaching stage is kept in the region of 5 – 15 g/l.

5. (Currently Amended) ~~[[A]]~~ The method according to ~~any of claims 1–4,~~ ~~characterised in that~~ claim 1, wherein the solids of the concentrate leaching and jarosite precipitation stage are routed to the final stage of leaching, a conversion stage, in which the acid content is kept in the region of 25 -70 g/l H₂SO₄.

6. (Currently Amended) ~~[[A]]~~ The method according to claim 5, ~~characterised in that~~ wherein the acid content in the final leaching stage is kept in the region of 30 – 50 g/l.

7. (Currently Amended) ~~[[A]]The method according to any of claims 1—6, characterised in that~~ claim 1, wherein the zinc calcine is leached in the neutral leaching stage using the solution containing zinc sulphates and iron sulphates taken from the concentrate leaching and jarosite precipitation stage and return acid from electrolysis.

8. (Currently Amended) ~~[[A]]The method according to claim 7, characterised in that~~ wherein the oxygen and/or air is fed into the neutral leaching stage in order to oxidise the ferrous iron and precipitate it as hydroxide $\text{Fe}(\text{OH})_3$, which co-precipitates the harmful minerals in the solution.

9. (Currently Amended) ~~[[A]]The method according to claim 8, characterised in that~~ wherein the harmful minerals are germanium and antimony.

10. (Currently Amended) ~~[[A]]The method according to any of claims 1—9, characterised in that~~ claim 1, wherein the leaching in the concentrate leaching and jarosite precipitation stage is performed using oxygen and/or air and the acidic sulphate solution containing zinc and iron from the conversion stage.

11. (Currently Amended) ~~[[A]]The method according to any of claims 1—10, characterised in that~~ claim 1, wherein the acid level in the concentrate leaching and jarosite precipitation stage is adjusted using return acid.

12. (Currently Amended) ~~[[A]]The method according to any of claims 1—11, characterised in that~~ claim 1, wherein alkali or ammonium ions are fed into the concentrate leaching and jarosite precipitation stage in order to precipitate the jarosite as alkali or ammonium jarosite, and that jarosite nuclei are recirculated within the stage.

13. (Currently Amended) ~~[[A]]The method according to any of claims 1—12, characterised in that~~ claim 1, wherein the solids remaining from the concentrate leaching and jarosite precipitation stage, which contain undissolved ferrites, part of the concentrate and the generated jarosite, are leached in the conversion stage using oxygen and electrolysis return acid in order to leach the ferrites and end concentrate and to precipitate the dissolved iron as jarosite.

14. (Currently Amended) ~~[[A]]The method according to any of claims 1—13, characterised in that~~ claim 1, wherein flotation is performed on the solids formed during the concentrate conversion stage in order to form sulphur concentrate.